



INTERIM REPORT
OF THE
NATIONAL COMMISSION
ON
AGRICULTURE

ON
विवरण

ORGANISATIONAL ASPECTS OF
ALL-INDIA COORDINATED
RESEARCH PROJECTS

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
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SUMMARY OF RECOMMENDATIONS

1. Keeping in view the benefits of coordination in research, especially in the field of agriculture*, the Commission has examined, in considerable detail, the organisational aspects of the All-India Coordinated Research Projects financed by the ICAR. On the basis of this examination, the Commission recommends reallocation of emphasis and redistribution of responsibilities in the overall administration of agricultural research among the ICAR, Agricultural Universities, Central and State Research Institutes and State Departments.

(Paragraph 4.1)

2. Coordinated programmes on research problems of both fundamental and applied nature in the sphere of agriculture, which are important from the national point of view, should be sponsored by the ICAR. These programmes, which may be of long-term or short term nature, should be drawn up carefully after a review of the present status of research in the particular branch or field and the gaps that are to be filled up.

(Paragraph 4.2)

3. The formulation of Coordinated Research Programmes and of methods of implementing them requires a careful assessment of all categories of research that is being done by the scientists in the Agricultural Universities and Central Research Institutes, and of the projects and schemes being implemented there, the scope and the need for further research work, and the nature and extent of funding needed. For this purpose ICAR may set up small teams which would study in depth the Agricultural Universities and the Central Research Institutes in regard to these items. The funds to be given to the Universities should be made available by way of block grants.

(Paragraph 4.2)

4. The All-India Coordinated Research Projects should broadly satisfy the following criteria:

- (i) the projects should envisage problem-oriented applied research of known knowledge under different broad agro-climatic conditions with marginal short-term basic research;

*Agriculture includes horticulture, animal husbandry, fishery, forestry, etc.

- (ii) the problems to be studied should be of national importance and they may belong to a single discipline or may be multi-disciplinary;
- (iii) the problems should be such as to warrant the concentration of efforts of a number of scientists on a single problem; and
- (iv) the projects should aim at developing recommendations in the shortest time for increasing production.

ICAR should review the existing All-India Coordinated Research Projects in the light of these criteria and restrict the Projects to those which satisfy them. New All-India Coordinated Research Projects should be sanctioned only when all the above criteria are satisfied.

(Paragraph 4.3)

5. Research problems requiring multi-disciplinary approach need not necessarily be covered under the Coordinated Research Projects. In cases, where it is necessary to carry on the relevant research at more than one Centre, a coordinated programme with appropriate arrangements for funds and coordination should be developed without the necessity of having the Coordinated Research Projects.

(Paragraph 4.4)

6. In regard to the research programmes undertaken outside the Coordinated Projects, by the Agricultural Universities and the Central Institutes there would ordinarily be no need to set up a separate coordinating body. It should be possible for the scientists working in the field to come together and draw up coordinated research programme suitably distributing among themselves the different aspects of the programme. The ICAR may also help to locate scientists working on related topics and bring them together for coordinating their research activities.

(Paragraph 4.5)

7. All Research work of local importance should be carried out by the Agricultural Universities and the State Departments through their own organisations. There will ordinarily be no need for making any institutional arrangements by the ICAR for coordination of such work.

(Paragraph 4.5)

8. In addition to the coordinated programmes and the coordinated projects, the ICAR should streamline its procedures for financing, on *ad hoc* basis, individual schemes submitted by the scientists which

are considered important. Where appropriate, steps should also be taken to obtain suitable schemes, identified by the Scientific Panels, for implementation by research workers. In that case there would be justification to place additional funds at the disposal of the ICAR for financing these schemes.

(Paragraph 4.6)

9. An important objective of the Coordinated Research Projects being to provide additionality and not to replace the research efforts already in hand, State Governments should not reduce the allocations for research in their development plans.

(Paragraph 4.7)

10. A very large part of the research work in agriculture should be conducted outside the purview of the coordinated projects under the coordinated and individual programmes.

(Paragraph 4.8)

11. The number of Workshops should be reduced by suitably grouping together those of allied disciplines. In case of crops like rice, oilseeds, pulses, etc. which are grown in diverse agro-climatic conditions, it would be appropriate to have zonal workshops. In order to have meaningful discussions at these workshops, the number of invitees should be limited to those who are directly involved in the programme and a few other experts whose views and guidance may be beneficial. In view of the financial constraints of the ICAR, it is very essential that Agricultural Universities and State Governments should provide adequate funds for meeting travelling and other expenses of working scientists and other research workers for encouraging their participation in the workshops and seminars on various Coordinated Projects.

(Paragraph 4.9)

12. It would be desirable to associate the farmers, extension personnel, users and the industry also in the deliberations of the workshop at suitable intervals so as to get a feel of the field problems.

(Paragraph 4.10)

13. The headquarters of the All-India Coordinated Research Projects should be reviewed in the light of the following suggestions and the locations should, if necessary, be shifted accordingly:

- (i) the headquarters should represent the most important area with maximum scope for improvement;

- (ii) it should have a good research environment;
- (iii) it should have relationship to the importance of the problem germane to the agro-economy of the area;
- (iv) it should have adequate administrative support and physical facilities of laboratory, field, etc; and
- (v) it should have some relationship with the location of trade and industry concerning the specific project, e.g. tobacco.

(Paragraph 4.11)

14. Coordinated Research Projects should include a provision of non-recurring grant for construction of glass houses, laboratory facilities, etc. This would enable locating these Projects at different Universities agreed upon in the context of the criteria mentioned in paragraph 4.3.

(Paragraph 4.11)

15. There is great scope for improvement in the location of Centres and Sub-Centres under various Coordinated Projects. The most important criterion which should be taken into account in determining their location is the importance of, say, a crop or livestock species in the region and specific problems therein. Some other criteria to be kept in mind in deciding the actual location of the Centres/Sub-Centres are:

- (i) existence of Central Research Institute/Agricultural University/Experimental Station;
- (ii) quality of research staff already available in the Institute/University/Experimental Station, etc. and availability of contact with high level scientists in various disciplines; and
- (iii) availability of facilities (land, irrigation, library, laboratory, etc.) at the Institute/University/Experimental Station, etc.

(Paragraph 4.12)

16. The Project Coordinator should be a technically competent scientist in the field. mere length of service should not be the criterion for his selection; instead, the quality of his performance as also the capacity to coordinate work of fellow scientists should be the major criteria.

(Paragraph 4.13)

17. In order to enable the Project Coordinator to keep himself in touch with developments in research, he may carry out research pertinent to the Project without detriment to his responsibilities as

coordinator, and for this purpose senior research fellows may be attached to him, where necessary.

(Paragraph 4.13)

18. The question of rotation of other scientists in the Project on the post of the Project Coordinator deserves consideration. Though it is felt that it would be possible only in a Coordinated Programme and not in the Coordinated Project, yet it would be worth trying this suggestion in one or two Projects and, if found successful, be extended to other Projects of long duration.

(Paragraph 4.14)

19. The interests of the staff recruited for the Coordinated Projects in the matter of lien, deputation, etc. should be safeguarded to the maximum extent possible. Technical staff in the Project should be on the cadre of the University/Institute.

(Paragraph 4.15)

20. It is not necessary that the Leader of the Team at a Crop Research Centre/Sub-Centre under the Coordinated Projects should always be a plant breeder. Specialists in other disciplines may also be appointed as Leaders wherever circumstances warrant such leadership.

(Paragraph 4.15)

21. There should be continuous and rigorous assessment of each Project. For this purpose, ICAR should develop a system of regular progress reporting on a quarterly basis. Unless the Project Coordinator certifies that the work is satisfactory, release of funds should not be made to that Project.

(Paragraph 4.16)

22. There should be not only a regular financial audit but also a performance audit of the Coordinated Research Projects at regular intervals.

(Paragraph 4.16)

23. There should be a suitable system of adjustment through which savings on particular Project Centres or Sub-Centres could be allowed to be utilised for other Projects which have shown significant progress.

(Paragraph 4.17)

24. Foreign exchange needed for the import of essential equipment and livestock for various Coordinated Research Projects should be ensured.

(Paragraph 4.17)

25. There should be simplified and speedier procedures for the sanctioning of Coordinated Research Projects, especially at the State Department/Agricultural University level. Also, some flexibility should be provided in the allocation of funds. There should be a small grant at the disposal of the Project Coordinator which could be utilised for unforeseen items of expenditure.

(Paragraph 4.18)

26. The problem of coordination between various Projects should receive urgent attention by the ICAR. Joint Workshops should be organised for such projects which are inter-linked with one another. The unit of the Project Coordinator should be a part and parcel of the Institute/University where it is located so that there is mutual exchange of ideas, proper contacts and regular flow of information between the Project-Coordinator and the specialists at the Institute/University in the working of the Project. Similar exchange of ideas, contacts and flow of information should be encouraged between the workers under the Coordinated Projects and outside the Coordinated Projects to ensure effective symbiosis.

(Paragraph 4.19)

27. There is need for testing a new technology on a large scale. The primary purpose of such testing would be to identify the operational problems of the transfer of technology under a given socio-economic milieu. This involves participation of competent agricultural economists and rural sociologists in its formulation as well as implementation. In this way, the cost-benefit relationship of the technology can be worked out in detail. This could also form the basis both for Government decisions and for credit agencies to select creditworthy projects. This type of operational research should be taken up by the Agricultural Universities/Central Research Institutes in close coordination and collaboration with the development agencies.

कर्मसुख संघर्ष

(Paragraph 4.20)

INTERIM REPORT ON ORGANISATIONAL ASPECTS OF ALL-INDIA COORDINATED RESEARCH PROJECTS

SECTION I

INTRODUCTION

1.1 In the Interim Report on Some Aspects of Agricultural Research, Extension and Training, the National Commission on Agriculture made recommendations for the creation of a sound base for agricultural research in the country. In this context the aspects relating to allocation of research, extension responsibilities, integration of research, teaching and extension, coordination and cooperation amongst Agricultural Universities, Central Institutes and State Departments, as also funding of research were considered in that Report. The Commission did not examine in that Report the methods which exist for testing the applicability of results of research in a wide variety of situations, so that their transference to the field is quick and effective.

1.2 For organising problem-oriented research of all-India importance, the ICAR has evolved, after careful deliberations, what has been designated as the All-India Coordinated Research Projects mentioned in the Report for the sake of brevity as Coordinated Projects, or simply Projects. Even though the Projects had originally a general outline of objectives, it is observed that in course of time considerable variations in the formulation of the objectives or targets of achievement have come about. As a result, the criteria which are supposed to be generally fulfilled by these Coordinated Projects are no longer clearly defined.

1.3. The initial success of the Coordinated Projects, first with the hybrid maize, and subsequently with other crops, encouraged extension of the idea to other programmes of research; in this way, the Coordinated Projects received the seal of approval as the only effective method of identifying research results in agriculture suitable for being transferred to the field. The concept of Coordinated Projects which began with varietal testing apparently got extended to various other programmes without any thorough study of their good and bad points. Time has come to assess whether this concept requires modification.

1.4 Discussions were held with the Project Coordinators in charge of some of the Projects. Appendix I gives a list of Project Coordinators, with whom such discussions were held. Based on these discussions a Questionnaire was issued to various State Governments, Central Institutes, Agricultural Universities and ICAR. A copy of

this Questionnaire is given in Appendix II. It sought information and views on several aspects relating to the Coordinated Research Projects. Appendix III gives the list of Institutions which replied to this Questionnaire. These issues were also considered in some detail at a meeting with the Director General of ICAR. Based on this discussion and study of the replies received to the Questionnaire, certain guidelines have been suggested for critically examining these Coordinated Research Projects and improving their functioning in the future. The Commission after examining these Projects in some depth has given its recommendations in this Interim Report for immediate consideration by the Government.

SECTION II

HISTORICAL BACKGROUND

2.1 Agricultural research* was being conducted under the aegis of the various Central Research Institutes and the State Departments of Agriculture even before the Indian Council of Agricultural Research was set up in 1929. Since their inception, the ICAR and the Commodity Committees have been playing an important role in promoting, financing and coordinating research in agriculture and allied fields in the country. These agencies, however, had to limit their functions to their spheres of activity. Further, agriculture including agricultural education and research having been included in the State list under the Indian Constitution, the responsibility for agricultural research rests, by and large, with the State Governments. There were, no doubt, a few Central Research Institutes, but the total funds available for research in both the Central and State budgets were inadequate in relation to the needs. Because of this, the level of organisation and research productivity varied from State to State and the performance of some of the research institutes was rather uneven. Most of the State Departments had to depend heavily on financial support from the ICAR and the Commodity Committees for the maintenance and furtherance of their research activities.

2.2 According to the Note (Appendix VI) on Coordinated Research Projects received from the ICAR, in response to Commission's request, the ICAR recognised that the financing of *ad hoc* research schemes in an isolated and uncoordinated manner was not an effective approach to the solution of research problems in the country as a whole. The Council, therefore, adopted a policy of sponsoring major Coordinated Research Projects on all-India basis. The idea of

* Agriculture here includes horticulture, animal husbandry, fishery, forestry, etc. In this context, State Departments, whenever used in the report, will mean all such departments which pertain to these disciplines.

a Coordinated Research Project was first tried in practice in 1957 when the Coordinated Maize Breeding Scheme was initiated. It was, however, not till 1965 that systematic efforts were made to formulate Coordinated Projects in respect of other crops, livestock, fisheries and various other disciplines. A number of such Projects came into operation during the last 2 or 3 years.

2.3. At present 70 Coordinated Research Projects are reported to be in operation, covering diverse fields such as improvement of the major food, fodder and commercial crops, soils agronomy and agricultural engineering, as also animal science and fishery. An outlay of Rs. 34 crores was approved by the Planning Commission for these Projects in the Fourth Five-Year Plan. This amount was, however, subsequently reduced by the Planning Commission and the Ministry of Finance to Rs. 30.12 crores at the time of mid-term appraisal. In the first two years of the Fourth Plan (1969-70 and 1970-71) expenditure incurred on these projects was only Rs. 4.70 crores.

2.4. This outlay has to be viewed in the context of the total outlay for agricultural research in the Fourth Five-Year Plan, which is as under:—

	Revised Outlay
	(Fourth Plan)
	(Rs. crores)
(i) All-India Coordinated Research Projects	30.12
(ii) Schemes of Central Research Institutes	24.53
(iii) Research Schemes in State Plans	21.29
Total	<u>75.94</u>

In addition, the ICAR has sanctioned funds for *ad hoc* research schemes to the tune of Rs. 50 lakhs a year during 1969-70 and 1970-71.

2.5. The All-India Coordinated Research Projects are given 100 per cent assistance by the ICAR to cover the expenditure on the additional scientific and technical staff, contingencies and some essential equipments. The cooperating institutions provide physical facilities, such as laboratory, land etc. The staff working under the project is placed under the administrative control of the institutions at which the Project is located. The broad technical programme of the Project is drawn up by the ICAR or the Central Institutes, initially with the help of a group of scientists. Subsequently, the detailed technical programmes are drawn up every year at the annual or periodical Workshops, in which the scientists engaged on the Project participate.

Each Coordinated Project has provision for a full-time Project Coordinator, who is assisted by technical and other staff posted at various centres and sub-centres opened under the Project. In some Projects one of the Project Leaders in charge of a Centre is treated as a Zonal Coordinator. According to the ICAR, when these Projects were started, care was to be taken to review physical facilities and staff available at the Institutes where the Centre/Sub-Centres were to be located. In other words, the intention was to provide only the additional staff at the higher level of technical competence and other facilities needed for proper functioning of these Projects.

2.6 In the Note (Appendix VI) received from the ICAR, it has been stated that the All-India Coordinated Research Projects are based on the following three concepts:

- (a) problem oriented, coordinated research programme;
- (b) intensification of research at selected Centres for tackling important problems to support the new strategy of agriculture; and
- (c) strengthening of research where some leadership and the desired facilities are available.

In formulating the All-India Coordinated Research Projects, the problem was to be visualised for the country as a whole. Research Centres and Sub-Centres were to be located in different parts of the country to meet the needs of distinct agro-climatic zones and regions rather than for individual States. Another important feature of the Coordinated Projects was to be their multi-disciplinary approach. Thus, for example, in the Coordinated Project on Crop Improvement, where the main emphasis is on breeding of superior varieties and hybrids, research work is simultaneously carried out in related fields like agronomy, plant pathology, entomology and biochemistry, so that all the facts of research which are necessary to bring about an overall improvement in crop production, both in terms of quantity and quality, are brought to bear on the problem.

SECTION III

PRESENT STATUS OF ALL-INDIA COORDINATED RESEARCH PROJECTS—PROBLEMS AND DEFICIENCIES

3.1 As has been mentioned in the earlier Section, there are, in all, 70 All-India Coordinated Research Projects. These cover 24 projects in crop improvement, 6 in soils, 5 in agronomy and 4 in agricultural engineering, 25 in animal sciences and 6 in fisheries. Particulars of Plan outlays and expenditure on individual Projects, together with the years in which they were sanctioned are given in

Appendix IV. It will be seen that some of the Projects in crop sciences, soil and agronomy have been in operation only for two to three years.

3.2 The Coordinated Research Projects, as a system for the development of location specific research knowledge for wider application in the field through testing under different agro-climatic conditions has been commended by various international organisations. The Food and Agriculture Organisation of the United Nations has also observed that the lead given by India in this direction has been adopted in some other countries of Asia and Far East region. This system provides an effective arrangement for scientists working in different parts of the country under different administrative set-ups to cooperate in their research efforts and also to come together once or twice in a year in a 'Workshop' for exchange of ideas and experience. This helps in reviewing the progress and formulation of common programme in an effective manner. This method has been found useful for tackling field oriented problems particularly of multi-disciplinary nature. Before the introduction of the Coordinated Research Projects, coordination amongst related schemes financed by the ICAR was ensured through its various Committees. But there was no direct involvement of the researchers themselves in reviewing the progress of work and in formulating the future plans. The Coordinated Project system has removed these lacunae.

3.3 A close study of the Coordinated Research Projects, as they are functioning today, has brought to light certain defects of the system. Generally speaking, the researchers under the Coordinated Projects do not have contact with the general stream of research in the country except in the case of the scientists working in the Projects located at some of the Central Research Institutes and well-established Agricultural Universities where the Coordinated Projects have been integrated with the research undertaken in the respective Divisions. In the institutions where such integration has not taken place, the situation has been aggravated by various factors like separate funding of these Projects, their temporary nature, higher scales of pay attached to the posts under the Projects etc. The kind of dishotomy thus created in these institutions has undesirable repercussions on the staff relationships.

3.4 Further, it has been brought to our notice that research workers under some of the Coordinated Projects (e.g. Model Agronomic Experiments, Soil Test Crop Response Correlation Project) are collecting data in a routine and mechanical manner, without involving themselves in the work. It is also alleged that under some of the Projects, the programme is drawn up at one place, the designs at another place and then passed on to the workers in the Centres and

Sub-Centres, who collect the data and pass them on to the Coordinator for processing, interpretation and final recommendations. Under such circumstances, the researchers tend to lose interest and initiative in their work. The advantage of the system of Coordinated Projects which encourages group thinking is lost in such cases.

3.5 Moreover, it has been reported that in many instances, where a new Coordinated Research Project has come up, the work already being done at the existing State or University Centre comes to a close. This defeats one of the purposes of Coordinated Research Projects which are designed to supplement the resources available for research with the States and Agricultural Universities. Also, because of a general feeling that all problems would be taken care of by the Coordinated Projects, local problems have not received the attention they deserve. In reply to the Questionnaire issued by the Commission, a view was expressed that research on local problems should be undertaken by the Agricultural Universities and State Institutions, at the same time taking care to avoid duplication of efforts.

3.6 There is a general tendency to bring every research scheme which, has been implemented or proposed at more than one Centre within the purview of a Coordinated Research Project. It is noticed that some of them do not satisfy the criteria which the ICAR had in view at the time of initiating the Project. Several of these Projects lack clarity in purpose and have too wide a scope with reference to their technical programme. The Projects are too many, and several disciplines have Coordinated Projects on too narrow fields of activity. Some Projects have been included mainly on the ground that they are multi-disciplinary in character, while the only justification for including some others was that they are to be undertaken at different locations. In some cases, multi-disciplinary approach is not relevant to the Project to make it qualify for assistance from the ICAR as a Coordinated Research Project. Some of the work which could be done effectively in a properly equipped and staffed laboratory is sought to be done at several places in the name of a Coordinated Research Project. Again, there are schemes which are nothing but economic surveys and could have been conducted more efficiently and economically without the paraphernalia attached to an All-India Coordinated Research Project, namely a Project Coordinator, a Workshop, etc. In consequence, the scope of the Coordinated Research Projects has been extended too far and there are deliberate attempts to eventually transfer most of the work being done outside the Projects in the Universities and States Institutions to such Coordinated Projects in view of the 100 per cent financial assistance available to them from the ICAR.

3.7 It is reported that location of the headquarters of the Co-ordinated Research Projects is not always decided in the context of importance of the problems and the availability of requisite facilities. It will be seen in Appendix V that as many as 18 Projects are located at the Indian Agricultural Research Institute and three Projects at its Regional Stations. Further, eleven Projects are located at the Indian Veterinary Research Institute and six at the National Dairy Research Institute. Twentyfour Coordinated Projects have their headquarters at other Central Research Institutes under the ICAR and one at the ICAR headquarters. Only seven Projects are located at various Agricultural Universities and other Institutes outside the ICAR. There have been complaints that there is too much concentration of these Projects at the Central Research Institutes. It was explained that this congestion was due to the compulsion of circumstances and the urgency of starting the Projects during the Fourth Plan period. In this connection one important point to be borne in mind is that the Coordinated Projects do not have any provision of non-recurring grant for construction work. This appears to be one of the reasons why many of the Agricultural Universities did not come forward to have the headquarters located in the Universities. It will, however, be agreed that this crowding of the Projects at the Central Institutes is not in the best interest of the proper working of the Projects.

3.8. In regard to the procedure adopted by the Project Coordinators for identifying the problems on research, it is noted that the Annual Workshop is the forum at which the reports/papers on different problems presented by different Specialists are discussed. Replies to the Questionnaire received from some of the Agricultural Universities show that participation by the University Scientists in the Workshops is inadequate. It is reported that the financial constraints of the ICAR restrict participation of larger number of research workers from the Agricultural Universities in the Workshop. Further, it is indicated by some of the State Governments that the extension people are not generally associated with the Workshops and, as such, the field problems are likely to be lost sight of. The farmers and users of the agricultural produce (e.g. processors industry) also in most cases do not either attend or take part in discussions even if they are invited to the Workshops. Another deficiency reported in this regard is that in the case of a few Projects, the Workshops are not held regularly. The research information gathered under the Coordinated Projects is available only to the participants of the Workshops. Many scientists outside the Workshop do not know what is going on under these Projects.

3.9 Most of the Coordinated Research Projects have been experiencing problems of inadequate and delayed recruitment of staff as also frequent transfers of Specialists. It has been reported that several posts have yet to be filled up in the case of some Projects. Another problem which has been brought out during the discussions with the Project Coordinators is that the posts being temporary, there is a large turn-over of staff. Further, the terms and conditions of appointment of staff are also not quite satisfactory, and the conditions for leave, deputation, etc. are not always attractive to the employees. Some of the staff, though appointed whole time to work on the Project posts, also do other work of the Institution at which they are located and vice-versa. In the case of Crop Research Projects, generally a plant breeder is in-charge; Specialists in other disciplines being junior. This apart, it is also represented that several Project Coordinators have no hand in the selection of the staff. At the same time, one cannot ignore the fact that they have already a big load of work on their hands.

3.10 According to the indications available during the discussions with the Project Coordinators, some of the Project Coordinators do not have adequate financial powers. Some of them have also complained that they have to handle too much of accounting work under their Projects. Also in some cases, a Project Coordinator is subordinate to the Head of the Division in the Institute where he is located and the latter controls the use of funds. Funds for contingencies are reported to be inadequate. Provision of expenditure on travelling allowances and maintenance of vehicles is also stated to be insufficient. Foreign exchange made available for important equipments, livestock, etc. is inadequate in some cases.

3.11 As already stated above, with the coming of Coordinated Research Projects, most of the research programmes undertaken at the agricultural Universities and State Departments have been brought under the purview of these Projects. Previously ICAR was financing individual research schemes prepared by the Scientists in Agricultural Universities and other Central and State Research Institutes. Now only a part of the cess funds is being utilised for that purpose. The level of expenditure by the ICAR on research in Agricultural Universities and State Departments outside the All-India Coordinated Research Projects is, as noticed earlier, relatively low. Another view expressed in this connection is that not many research schemes are being received by the ICAR from various Agricultural Universities for being financed out of the cess funds. Replies to the Questionnaire, however, indicate the strong feeling among the Vice-Chancellors of some Agricultural Universities that the ICAR should finance other research schemes outside the Coordinated Projects so as to support the Universities in strengthening their research base.

3.12 The Commission has sponsored two Studies—one by the Indian Institute of Management, Ahmedabad, on "Organisation of ICAR", and the other by the Administrative Staff College, Hyderabad, on the "Application of Science and Technology to Agriculture". Both these studies have referred to the problems of implementation of All-India Coordinated Research Projects. Relevant extracts from their Studies are given below:—

STUDY BY THE INDIAN INSTITUTE OF MANAGEMENT, AHMEDABAD

"All-India Coordinated Projects

The idea of All-India Coordinated Projects was to identify important projects which required an all-India approach and collaboration of many scientists in different institutions, and which had an urgency about time. A Project by definition is temporary and is time-bound. It requires different specialisations and the emphasis is on team work. The results of some of the earlier All-India Coordinated Projects were so encouraging and gratifying that many research proposals were given the status of All-India Coordinated Projects.

It seemed to us that the way All-India Coordinated Projects are organised, funded and manned, has spread a network of unhealthy rivalry and competitiveness among colleagues, resentments against headquarters, and a widespread feeling of unfair practices of recruitment and promotions.

For the All-India Coordinated Projects, appointments are made on a full-time basis. Research workers in institutes and universities apply for these positions. Since, the salaries in the projects are higher than what they are drawing, many apply for these projects. People are consequently 'promoted' not because they deserve in terms of past accomplishment, etc. but because there is an opening in the Project. Colleagues who were junior become senior overnight. Each Project is inter-disciplinary in approach so that many different specialisations are included in each Project. Since each Project is a self-contained entity, though there is no full time work for a specialist in a given Project, they are hired full time.

With over 70 All-India Coordinated Projects spread over the country and membership in each project varying from a few to about 300 or so, the feeling of resentment, competitiveness, rivalry and unfairness is likely to be very widespread.

If projects appoint new people full time, there is a built-in mechanism of not completing the project. The research workers cannot return to their old jobs, and finishing their projects means an unknown

future. Although many new projects have been initiated in the last few years, we are not aware of projects which have been completed and terminated.

Project management, in any case, has many problems of inter-personal conflict because the requirements of team work, integration, and urgency are high. But with the existing system of funding and manning, the projects acquire an institutional character so that each research institution has super-imposed on it several other on-going institutions over which they have relatively little control. The confusion of authority and responsibility under the circumstances is considerable.

The system also places the headquarters in competition with its own constituent units. Research workers working in institutions are hired away from their jobs thus making any planning or commitment to long-term research impossible on the part of the research institutions.

The concept of project management, although extremely useful, needs to be re-examined, clarified, and re-organised."

STUDY BY THE ADMINISTRATIVE STAFF COLLEGE OF INDIA, HYDERABAD

"There are certain problems, however, in coordinating the research activities of scientists of different disciplines working on the research schemes of these projects. One of the zonal coordinators said that disciplinary specialists who are very often members of different departments of the university tend to frame research programmes on their own without consulting, or coordinating their activities with the Coordinator. Obviously the role of the Coordinator deciding the overall research programme for a particular zone needs to be emphasised. There are, however, a number of problems even in this regard. The feeling is often voiced that the Coordinators tend to ignore the interests of their colleagues, and tend to underplay the contribution of disciplines other than their own in the overall scheme. We feel that these problems of coordinator are bound to be there as long as a collegiate atmosphere and a corresponding system of decision-making does not prevail. What is required here is to insist on the mechanism of workshops, seminars of all the involved scientists before arriving at a unified picture of the coordinated scheme. Then again, the Coordinator's role is primarily administrative. We feel that it should be taken on by different members of the team every two or three years so that vested interest do not develop.

The coordinated project schemes have special relevance to the ICAR institutes. Eminent scientists who head these schemes are able to contribute towards teaching and research in their specialisations.

Their presence brings to the disciplines vast fund of knowledge about the actual conditions of the varied agro-climatic regions all over India. Their presence in the institutes is, therefore, conducive to the development of an All-India perspective for disciplinary research. The schemes further strengthen the applied orientation within the institutes. These projects influence the content of their research programmes by providing feedback on the relevance of research to the specific agro-climatic zones of the country. Some of the scientists in these institutes fear that All-India Coordinated Projects may sometimes take upon themselves the role of central institutes for research in their crops. This, they fear, can lead to unnecessary duplication in work. Again, they feel that the Coordinator has an edge over other researchers in pushing through his own researches at the cost of researches done by others".

3.13 The above paragraphs highlight the deficiencies relating to scope, location, physical facilities, workshop, recruitment of staff and financing of the Project. There are a few other problems and deficiencies which are also no less important in an appraisal of these Projects. For instance, there is lack of coordination between the work done under these Projects and that undertaken by the Agricultural Universities and Central Institutes interested in the same or similar problems outside the Projects. There is also lack of coordination even between some of the Projects. Further, it is noticed that the unit of Project Coordinator is a separate unit in the Institution where it is located. In other words, there is little involvement and participation of the specialists in the Institution in the work of the Project and vice-versa. Finally, it is reported that research work done outside the Coordinated Projects and Centres on the same crop or same discipline is not taken notice of by each other.

SECTION IV

IMPROVEMENTS NEEDED

4.1 In its Interim Report on "Some Aspects of Agricultural Research, Extension and Training," the Commission has emphasised the need for strengthening agricultural research—basic, applied and adaptive—in the country. It has also recommended that the Indian Council of Agricultural Research, with the help of its Scientific Panels, should undertake to draw up long-term plans of fundamental and applied research, identify gaps in information and assign the problems of study for execution to appropriate scientists, Universities and Institutes. The Commission is firmly of the view that there is need for building up a strong base for fundamental and applied

research in the Agricultural Universities and the Central Institutions. Keeping in view the benefits of coordination in research especially in the field of agriculture, animal husbandry, fishery and forestry, the Commission has examined in this Report, the organisational aspects of the All-India Coordinated Research Projects financed by the ICAR. On the basis of this examination, the Commission recommends reallocation of emphasis and redistribution of responsibilities in the overall administration of agricultural research among the ICAR, Agricultural Universities, Central and State Research Institutes and State Departments.

4.2 Coordinated programmes on research problems of both fundamental and applied nature in agriculture which are important from the national point of view should be sponsored by the ICAR. These programmes should be drawn up carefully, after a review of the present status of research in that particular branch or field and the gaps that need to be filled in. These could be of long-term or short-term nature depending on the nature of the problem to be studied and the expected time that would be taken for obtaining the results. These programmes should be divided between the Agricultural Universities and the Central Institutes, depending on the nature of the problems to be studied. Thereafter, concrete proposals should be invited from the Universities and other Research Institutes, Central and State, in the respective branches or fields. These programmes should be funded by the ICAR wherever necessary. For this purpose, the ICAR might set up small Teams which could visit each University or the Research Institute, make an assessment of the research that is being done by the scientists in the Institution, the scope and the need for further work, extent to which the programmes could be funded by the University or the State Government or the Institution and the need for additional funds to be made available by the ICAR. The funds to be given to the Universities should be by way of Block Grants in order to develop a strong base for fundamental and applied research in the Universities. In making the assessment, the ICAR Teams should take into account the types of coordinated programmes envisaged above. An integrated view of the different disciplines, soil type and crops should be taken and then the scope for the participation of the staff in the Agricultural University should be examined. In this examination, the Coordinated Projects that will continue to be financed by the ICAR have also to be borne in mind.

4.3 There are some problems of national importance which could be handled under the All-India Coordinated Research Projects with advantage. There are problems in the fields of crop production,

animal husbandry, fishery and forestry, requiring the research findings to be applied to a variety of field situations throughout the country with the objective of obtaining quick solutions to the problems of all-India importance which are holding up progress. The lack of contact with the general stream of research is less serious in such cases. We, therefore, recommend that the All-India Coordinated Research Projects should broadly satisfy the following criteria:

- (i) the Projects should envisage problem-oriented applied research of known knowledge under different broad agro-climatic conditions with marginal short-term basic research;
- (ii) the problems to be studied should be of national importance and they may belong to a single discipline or may be multi-disciplinary;
- (iii) the problems should be such as to warrant the concentration of efforts of a number of scientists on a single problem; and
- (iv) the Projects should aim at developing recommendations in the shortest time for increasing production.

ICAR should review the existing All-India Coordinated Research Projects in the light of these criteria and restrict the Projects to those which satisfy the criteria listed above. New All-India Coordinated Research Projects should be sanctioned only when all the criteria are satisfied.

4.4 The replies to the Questionnaire issued by the Commission also indicate that the multi-disciplinary approach should be built into all the research programmes but it is not necessary that all research problems requiring multi-disciplinary approach should be covered under Coordinated Research Projects. In cases, where it is necessary to carry on the relevant research at more than one Centre, a coordinated programme, with appropriate arrangements for funds and coordination should be developed without the necessity of having a Coordinated Research Project.

4.5 The Commission has given careful thought to the problems of coordination of research programmes outside the Coordinated Projects, undertaken by the Agricultural Universities and the Central Institutes. Ordinarily, it may not be necessary to set up a separate organisation for coordinating such research. It should be possible for the scientists concerned to come together and draw up integrated programmes, suitably distributing amongst themselves different aspects of the work. ICAR may also help to locate scientists working

on related topics and bring them together for coordination of their research activities. Further, the scientists in the field should be knowing what other scientists in the same sphere are doing elsewhere. The problem, therefore, reduces to one of exchange of information which would pave the way for coordination. Another aim of coordination may be to avoid duplication of efforts, although duplication in scientific research is sometimes necessary. The best way of coordinating the research work of scientists under these varied circumstances should be evolved by the scientists themselves. Where it is necessary to have technical strengthening and financial support for coordination, the ICAR should provide them. There may be many types of coordination. The ICAR should lay down the type of coordination suitable to the particular programme under various schemes financed by it. All research work of local importance should be carried out by the Agricultural Universities and the State Departments through their own organisations and there may be no need for making any institutional arrangements by the ICAR for coordination of such research work.

4.6 In addition to the Coordinated Programmes and the Coordinated Project, the ICAR should streamline its procedures for financing, on an *ad hoc* basis, individual schemes submitted by scientists which are considered important. At present, such schemes are financed from the cess funds. Firstly, the funds available from the cess for financing of such *ad hoc* schemes are inadequate and, secondly, the procedure involved for obtaining sanction is quite laborious and time-consuming. It is necessary to devise procedures by which this delay is reduced considerably. Where appropriate, steps should also be taken to obtain suitable schemes identified by the Scientific Panels, for implementation by research workers. If this is done, there will be a case to place additional funds at the disposal of the ICAR.

4.7 It is stated in the earlier Section that in some cases wherever Coordinated Research Centres have come up, existing State/University Research Centres have been closed down. There is a general feeling that this tendency has to be discouraged. It is also reported that because of this, some other parallel research work which was being done in the Agricultural Universities is not undertaken now. This has to be deprecated. An important objective of these Projects being to provide additionality and not to replace the research efforts already in hand, it is reiterated that State Governments should not reduce the allocations for research in their development plans.

4.8 A distinction has to be made between a programme and a project. For instance, wheat improvement constitutes a programme while wheat breeding will be a project under this programme. Moreover, project is a facet of the programme which is time-bound and

also objectivebound. Further, under the Coordinated Projects there is no clear distinction in the categories of research conducted. In the case of crops, it is reported that some of the Coordinators are engaged in all the three categories of research, namely, basic, applied and adaptive. We would reiterate that only the problem-oriented applied research of known knowledge along with marginal short-term basic research should be conducted under these projects. In other words, a very large part of the research work in agriculture should be conducted outside the purview of the Coordinated Projects under the coordinated and individual programmes.

4.9 Annual and periodical workshops are being organised for reviewing the progress of work in the Project and for chalking out the programme for the next year. At present a large number of workshops are being held and in some of the workshops the number of participants is, at times, too large. In consequence, deliberations in such workshops tend to become of a general nature and in-depth examination of the problems becomes difficult. There is also a feeling that the workshop has become merely a ritual. In order to have meaningful discussions at these workshops, the number of invitees, in our view, should be limited to those who are directly involved in the programme and a few other experts whose views and guidance may be beneficial. We recommend that the number of workshops should be reduced by suitably grouping together those of allied disciplines. In case of crops like rice, oilseeds, pulses, etc., which are grown under diverse agro-climatic conditions, it would be appropriate to have zonal workshops. These zonal workshops should have more frequent meetings whereas the national workshops might meet once in two years. In regard to the participation of working scientists and other research workers from the Agricultural Universities and State research institutions, we recommend that in view of the financial constraints of the ICAR, already referred to earlier, Agricultural Universities and State Governments should provide adequate funds for meeting their travelling and other expenses.

4.10 As the workshop is the forum to consider various problems arising from the researches carried out under the Project, and as field acceptability is of great importance in the system of research, it would be desirable to associate the farmers, extension personnel, users and the industry also in the deliberations of the workshop at suitable intervals so as to get a feel of the field problems. However, it is expected that the research workers themselves should go out and have discussions with farmers in the local areas, as such frequent dialogues with farmers would help in identifying their problems.

Location of Projects

4.11 A number of Coordinated Research Projects have their headquarters at the Central Institutes. It was explained to the Commission that this procedure was adopted as facilities for organising the Research Projects were readily available at the Central Institutes, and that, but for the cooperation of the Institutes in housing so many of the Coordination Units, these Projects would have never been initiated during the Fourth Plan. It was also stated that compulsion of circumstances, rather than desire to locate them at the ICAR Institutes was the main factor underlying the present distribution of the Headquarters of these Projects. In this connection, a number of suggestions have been made in response to the Questionnaire issued by the Commission. These are as under:

- (i) the headquarters should represent the most important area with maximum scope for improvement;
- (ii) it should have a good research environment;
- (iii) it should have relationship to the importance of the problem germane to the agro-economy of the area;
- (iv) it should have adequate administrative support and physical facilities of laboratory, field, etc; and
- (v) it should have some relationship with the location of trade and industry concerning the specific project e.g. tobacco.

We recommend that keeping these suggestions in mind, the headquarters of the All-India Coordinated Research Projects should be reviewed and the locations should, if necessary, be accordingly shifted. In doing so, a favourable geographical distribution has to be ensured, provided that not more than two or three Projects have the headquarters located at the same place. It is noticed that there are very few Coordinated Research Projects located at the Agricultural Universities. It is primarily due to the fact that land and buildings are in most cases not available to house these Projects. We recommend that these Projects should include a provision of non-recurring grant for construction of glass houses, laboratory facilities, etc. This would enable locating the Coordinated Projects at the different Universities, decided in the light of the criteria indicated above.

4.12 A number of Centres and Sub-Centres have been set up in different States under the Coordinated Projects. Replies received to the Questionnaire support the view that there is great scope for improvement in this direction. The following criteria for selection of locations for Coordinated Project Centres have been proposed:

- (i) importance of a crop or livestock species in the region and specific problems therein;

- (ii) existence of Central Research Institute/Agricultural University/Experimental Stations;
- (iii) quality of research staff already available in the Institute/University/Experimental Station, etc. and availability of contact with high-level scientists in various disciplines; and
- (iv) availability of facilities (land, irrigation, library, laboratory etc.) at the Institute/University/Experimental Stations, etc.

In the Commission's view, the most important criterion is the first one. In taking decisions on the actual location of the Centres, however, the other criteria may also be kept in mind. Thus, if a Centre is located at the most important place and if at the location, adequate facilities are not available, it should be possible to augment them under the Project.

Administrative matters

4.13 The problem of recruitment of staff and allied matters have been discussed in the earlier Section. We recommend that the Project Coordinator should be a highly competent scientist in the field, possessing qualities of leadership. Mere length of service should not be the criterion for his selection; instead, the quality of his performance as also the capacity to coordinate the work of fellow scientists should be the major criteria. If he is on deputation from any of the Universities or Research Institutes, all the requisite facilities of leave, deputation, etc. should be given to attract him to the post of Coordinator. In order to enable him to keep in touch with developments in research, the Project Coordinator may be allowed to undertake research on his own, and for this purpose, senior research fellows may be attached to him.

4.14 A suggestion has been made that insofar as the post of Project Coordinator is concerned, other scientists in the Project should be allowed to hold it by rotation. It is felt that it would be possible only in a Coordinated Programme and not the Coordinated Project. Such a rotation would be feasible in case of Zonal Coordinators. At the same time, we recommend that this may be tried in one or two Projects on a trial basis and, if found successful be extended to other Projects of long duration.

4.15 The technical staff in the Projects should be on the cadre of the University/Institute. Also, interests of the staff recruited for the Project in the matter of leave, deputation etc. should be safeguarded to the maximum extent possible. It is not necessary that the leader

of the team, say, at a Crop Research Centre/Sub-Centre under the Project should always be a plant breeders. Specialists in other disciplines may also be appointed as leader where circumstances warrant such leadership.

4.16 In regard to implementation, we recommend that there should be continuous and rigorous assessment of each Project. For this purpose, ICAR should develop a system of regular progress reporting on a quarterly basis. The progress reports should be scrutinised by the Project Coordinator. Unless the Coordinator certifies that the work is satisfactory, release of funds should not be made to that Project. We would further recommend that there should be not only a regular financial audit, but also performance audit of each Project, at regular intervals.

4.17 There are other difficulties relating to the inadequate budget for contingencies or for expenditure on maintenance of vehicles, equipment, etc. These have to be overcome for successful implementation of the Project. We recommend that there should be a suitable system of adjustment through which savings on particular Project Centres or Sub-Centres could be allowed to be utilised for other Projects where progress has been quite significant. We also recommend that foreign exchange needed for the import of essential equipment and livestock for various Projects should be ensured.

4.18 It is noticed that the procedures for sanctioning of Co-ordinated Research Projects have been quite complex. It is also reported that even after the Project is sanctioned by the Indian Council of Agricultural Research, it cannot start functioning unless the State Government/Agricultural University also sanctions the Centre/Sub-Centre and the connected expenditure. It appears that there are delays in these sanctions at the level of State Department/Agricultural University which stand in the way of speedy recruitment of staff etc. needed for effective implementation of the Project. We, therefore, recommend that simpler and speedier procedures should be evolved for the sanctioning of the Projects especially at the State Department/Agricultural University level. Further, it is also noticed that funds allocated for some of these Projects in the Annual Plans are not utilised in full. This necessitates some flexibility in the allocation of funds. There should also be a small grant at the disposal of the Project Coordinator which could be utilised for unforeseen items of expenditure.

4.19 The problem of coordination between various Projects has been highlighted in the earlier Section. We recommend that urgent steps should be taken by the ICAR to overcome this problem. For instance, a joint workshop should be organised for such Projects

which are interlinked with one another. Further, as already stated in the earlier Section, the Unit of the Project Coordinator should be a part and parcel of the Institute/University where it is located, so that there is mutual exchange of ideas, proper contacts and regular flow of information between the Project Coordinator and the Specialists at the Institute/University in the working of the Project. Similar exchange of ideas, contacts and flow of information should be encouraged between the workers under the Coordinated Projects and outside the Coordinated Projects to ensure effective symbiosis.

4.20 Apart from the problems of Coordinated Programmes and Coordinated Projects, there is one other issue on which the Commission would like to express its views at this stage. This relate to large scale testing of technology. It has been noticed that even after the research results are available, there is often need for testing a new technology on a large scale. The knowledge inputs needed for such large Projects are of a demanding nature and the economics of the results of research under actual field conditions will have to be tested before they are adopted in the field. For example, integrated watershed management of black soils, reclamation of saline and alkaline soils, performance of cross-bred animals, composite fish farming—all these could be tried on an area basis. The primary purpose of such testing would be to identify the operational problem of the transfer of technology under a given socio-economic milieu. This kind of testing involves, in addition, the participation of competent agricultural economists and rural sociologists in its formulation as well as implementation. In this way, the cost-benefit relationship of the technology can be worked out in detail. This could also form the basis both for Government decisions and for credit agencies to select credit worthy projects. Such large scale testing in our view forms part of applied research and we, therefore, recommend that this should be taken up by the Agricultural Universities, Central Research Institutes on suitable problems of relevance to the areas in which they are located, in close coordination and collaboration with the development agencies.

4.21 Coordination amongst research scientists working on related problems, whether belonging to the same or different disciplines, is regarded by the Commission as essential for a quick transference of the results of research to the field. In this overall coordination, the All-India Coordinated Projects occupy an important position. These Projects should have, however, well-defined criteria and objectives, as are laid down in this Report (Paragraph 4.3). In view of the criteria that the Coordinated Research Projects are to be formulated on the basis of known knowledge, a considerable part of research will have

to be done outside these Projects, for which the Agricultural Universities and the Central and the State Research Institutes have to be suitably supported financially by the ICAR. The Commission has already, in its Interim Report on Some Aspects of Agricultural Research, Extension and training, recommended creation by the ICAR a few Chairs of Excellence for attracting the outstanding scientists. Coordination of research efforts may also originate from the scientists themselves in the form of coordinated programmes as distinct from the All-India Coordinated Projects. Alternatively, the ICAR may locate a group of scientists working in different laboratories on nearly the same problem or different aspects of the same problem, and find it worthwhile to bring the scientists together under a Co-ordinated Programme of research and give, if necessary, appropriate financial and other assistance. The ICAR may also invite assistance of research scientists of the appropriate disciplines for formulating and implementing a coordinated research programme on problems identified by it as of sufficient interest to the country as a whole. The financing of this programme should be the responsibility of the ICAR itself. There will still be scope for financing ad hoc research schemes of merit of a basic as well as applied nature submitted by individual scientists working in the Agricultural Universities/Central Research Institutes. Funding and execution of research problems which are strictly of a local nature should be the responsibility of the Agricultural Universities and State Governments.

SECTION V

ACKNOWLEDGEMENTS

5.1 The Commission takes this opportunity to thank the Indian Council of Agricultural Research, State Governments and Agricultural Universities for supplying necessary material in response to the Questionnaire issued by the Commission. The Commission is also grateful to those Project Coordinators, with whom discussions were held in the Commission, for their valuable suggestions.

5.2 The Commission also wishes to place on record its deep appreciation of the work done by Shri Sada Nand, Joint Director, who has helped in the preparation of the Report. Our thanks are also due to Shri M. L. Manrai, Deputy Director and Shri S. P. Mathur, Research Investigator of the Research Division, who assisted in this work.

Sd/-

NATHU RAM MIRDHA,
Chairman

Sd/-

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N. K. PANIKKAR

Sd/-

J. S. Sarma

Member Secretary

February 27, 1973.

NEW DELHI

APPENDIX I

List of Project Coordinators with whom discussions were held

Name of the Project 1	Date of discussion 2	Name of the Project Coordinator 3
I. Food Crops :		
1. Rice	17th February, 1972	Dr. S.V.S. Shastry
2. Wheat	15th July, 1971	Dr. S.P. Kohli.
3. Barley	19th February, 1972	Dr. J.S. Bakshi
4. Maize	14th February, 1972	Dr. Joginder Singh
5. Millets	14th February, 1972	Dr. B.R. Murty
6. Pulses	15th February, 1972	Dr. S. Ramanujam
II. Commercial Crops :		
7. Sugarcane	29th April, 1972	Dr. S.C. Srivastava
8. Cotton	18th February, 1972	Dr. V. Santhanam
9. Oilseeds	17th February, 1972	Dr. S.S. Rajan
III. Horticulture :		
10. Citrus Die-back	24th May, 1972	Dr. K. M. Aiyappa
11. Vegetables	24th May, 1972	Dr. Vishnu Swarup
IV. Others :		
12. Forage Crops	3rd May, 1972	Dr. B.D. Patil
V. Research in Soils, Agronomy and Agricultural Engineering :		
13. Soil Test Crop Response Correlation	27th April, 1972	Dr. B. Ramamoorthy*
14. Research on Water Management and Salinity	28th April, 1972	Dr. J.S.P. Yadav
15. Agronomic Experiments	29th April, 1972	Dr. I.C. Mahapatra
16. Dryland Agriculture	23rd May, 1972	Dr. Ch. Krishnamoorthy
VI. Animal Sciences Research :		
17. Cattle	16th March, 1972	Dr. P. N. Bhat
18. Buffaloes	12th May, 1972	Dr. R. Nagarcenkar
19. Sheep for fine wool	18th March, 1972	Dr. R. M. Acharya
20. Sheep for mutton	18th March, 1972	Dr. R.M. Acharya
21. Pigs	16th March, 1972	Dr. P. N. Bhat
22. Poultry for eggs	12th May, 1972	Dr. B. Panda

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|---|------------------|--------------------|
| 23. Poultry for meat . . . | 12th May, 1972 | Dr. S.E. Mahapatra |
| 24. Epidemiological studies on Foot and Mouth Disease . . | 17th March, 1972 | Dr. S. Kumar* |
| 25. Respiratory diseases of poultry and their control | 17th March, 1972 | Dr. B.B. Malik |

VII. Dairying :

- | | | |
|---|------------------|----------------------|
| 26. Cost of chilling and transportation of milk to city dairies | 20th March, 1972 | Dr. M.R. Srinivasan* |
| 27. Economic methods of utilisation of surplus/ sub-standard milk. | 20th March, 1972 | Dr. M.R. Srinivasan* |
| 28. Technological and economic problems of operation in liquid milk plants. | 20th March, 1972 | Dr. M.R. Srinivasan* |

VIII. Fisheries Research

- | | | |
|---|---------------|-------------------|
| 29. Studies on Marine Prawn Biology and resources. | 4th May, 1972 | Dr. S.Z. Qasim |
| 30. Propagation of stocking of fish seeds of air-breathing fishes for culture in swamps . | 4th May, 1972 | Dr. P.V. Dehadaji |

*—Looking after the work of Coordinator on part-time basis.

APPENDIX II

NATIONAL COMMISSION ON AGRICULTURE

Questionnaire on Coordinated Research Projects

The Indian Council of Agricultural Research has drawn up a number of Coordinated Research Projects for the improvement of major crops. In the beginning researches under these projects primarily aimed at breeding superior varieties and hybrids of crop plants but in later years a multi-disciplinary approach is concurrently made to evolve superior agronomic practices and to develop schedules for the control of pests and diseases so that maximum yields may be obtained from these varieties. Coordinated Research Schemes have also been taken up on different problems of soils, fertilisers, agronomy, soil and water management, animal sciences and fisheries. Research work under the projects is taken up at selected centres in different agro-climatic and soil regions. The coordinated projects are financed and operated by the ICAR in close collaboration with the Central Research Institutes, Agricultural Universities and State Departments of Agriculture. The scientists working in the coordinated projects meet annually at a Workshop, discuss and evaluate the work done during the year and prepare plans for the next year. According to the ICAR Handbook (1971) a number of small schemes, crop-wise and discipline-wise, are now operating in different States, Universities and Research Institutes and attempts are being made to bring all the useful schemes under the purview of All-India Coordinated Projects in order to make them more purposeful.

An analysis of the existing coordinated research projects (vide list of projects enclosed) indicates that these fall under various types. The crop improvement schemes for instance, represent the first type. Under these, the improved varieties evolved are tried at different locations under identical conditions and also agronomic practices suited to each area are evolved on the basis of trials. The data collected at different centres on identical lines are analysed by the Coordinator.

In an other type of schemes, e.g., the Foot & Mouth Disease Project different strains of viruses are sought to be identified with a view to manufacture different kinds of vaccines to control the disease. In such cases, the work relating to collection of samples can be done through appropriate field agencies belonging to States and the work relating to isolation and typing of viruses could be done at a Central Laboratory where facilities exist.

Yet another type of schemes such as Studies in Economics of Chilling and Transport of Milk, etc. are in the nature of Surveys involving collection of data which could be undertaken by individual research centres, the only coordination needed being to see that uniform concepts, definitions and procedures are adopted and results are published together.

A review of these Coordinated Projects made in the Commission has shown some deficiencies and thrown up a number of problems regarding the formulation and implementation of these schemes. Some of these are dealt with in the questions given below:—

1. What is your view on the scope and coverage of the Coordinated Research Projects? According to your view, which of the projects mentioned in the enclosed list should be or should not be covered under the programme of coordinated projects?

2. For the research programmes which should not fall under the purview of the Coordinated Research Programmes but are now being covered under them, what procedure should be followed for continuing the work under the Departments/Universities and how should these research programmes be funded?

3. There is a view that the multi-disciplinary approach should be built into all our research programmes and it is not necessary that all research problems requiring multi-disciplinary approach should be covered under the Coordinated Research Projects. In some cases, where it is necessary to carry on related research programmes at more than one centre, coordinated programmes should be developed, without the necessity of having a formal coordinated research project, with appropriate arrangements for funding and coordination. Do you agree with this view?

4. The other view is that the work undertaken at present under some of coordinated research projects is more of a routine nature consisting of collection of data on different aspects of crop or animal husbandry research. It is essential to have a fuller involvement of the experts in various disciplines in the project so as to improve the tone of the work. What is your reaction to this proposal?

5. It has been stated that whenever a new Coordinated Research scheme is sanctioned the work already being done at the State or University Centre is closed and only the programme under the Coordinated Research Project is taken up for implementation. This defeats the very purpose of coordinated research, which is to bring additionality to the resources available for research with the State/Universities. There seems to be a general feeling that all problems will be taken care of by Coordinated Projects. As a result local problems do not receive the required attention. What are your views in the matter? What is your suggestion to improve the situation?

6. There is a view that if during the course of working the coordinated project, problems requiring fundamental research work are identified, there should be an automatic system whereby these problems are taken over for research and funding by the ICAR in case they are of all-India nature and by the State Departments/Universities in case they are of a regional/local nature. Where the amount is small, the Project Coordinators should have some discretionary funds at their disposal to undertake programmes to tackle such problems. Do you agree with this view? If so what arrangements would you suggest for funding? If not what are your alternative suggestions?

7. On the basis of the experience of the working of the projects in your State, is it possible to say that the coordinator makes the maximum use of the existing facilities and material to find solutions to local problems which were limiting agricultural production in your region? Are these projects engaged in finding solutions to the problem faced by specific agro-climatic regions?

8. Would it be desirable to encourage the Project Coordinator to do independent research work with a view to keep himself abreast of the developments in his subject matter field or would such an involvement detract from the utility of the Project Coordinator for running the project? Some of the Project coordinators have suggested that a few Fellowships to selected candidates from State Agricultural Universities to work under them would be of help in this direction. Another suggestion is to provide few research assistants to the Coordinator. What is your view?

9. The annual technical programmes of the Research Projects are formulated in the Workshops. The workshops also review and evaluate the performance under the projects. Do you consider the participation level by the State Governments/Universities Extension Workers etc. adequate in the Workshops under the various Coordinated Projects? What are your suggestions for improving the participation?

10. The scope of the annual Workshops should be enlarged. At the same time, Workshops where a large number of people with different interests and specialisations attend are not conducive to efficient discussions. It is better to organise the Workshop in such a way that specific days are allotted for different types of discussions. For example, half a day may be set apart for discussions with Extension Officers of the States to find out what their problems are. A few growers' representatives with specialised knowledge of the crop or discipline under consideration may also be invited to this session. Another half a day may be devoted to discussions with users of the product, e.g. representatives of industries utilising the product. This will enable one to know the nature of crop improvement required. Do you agree with these views? What are your other suggestions to improve the value of discussions in the Workshop?

11. Would an annual meeting with the relevant State Directors of Agriculture/Animal Husbandry/Fisheries for discussing the various recommendations made at the Workshop and clearing them quickly for action facilitate the dissemination of the research findings to the fields? What are your suggestions for maintaining a closer liaison between the Project coordinator, the State Directors of Agriculture/Animal Husbandry etc. and the State Agricultural Extension Officers?

12. There is a common complaint that the recruitment of staff under the projects is delayed and that there is quick turn-over of staff in the absence of projects of permanent nature. What are your comments on the present mode of recruitment and selection of staff? Should Project Coordinators be associated with the selection? Please give your specific suggestions in this regard.

13. A view is held that a breeder need not always be the leader of the team. It may be useful to have Specialists in other disciplines also as the project leaders, depending on the nature of the specialisation and the requirements of the schemes and the quality of individual person. Do you agree with this view?

14. Do you consider that the Projects in your State are located at suitable Centres and have requisite facilities for research and contact with high level scientists? Please give your views on the criteria for selection of locations for the various projects.

15. It has been suggested that each Project Coordinator should be advised by a group of top scientists working in the field in matters relating to sanctioning of the schemes, technical programme, evaluation, etc. once this Group approves the proposal, ordinarily there should be no need to refer these to the ICAR's Scientific Panels for a second opinion. Once a technical programme has been drawn up, no one should ordinarily interfere in its implementation. What is your view?

16. A number of project coordinators are located in Central Research Institutes. There is a view that these Project Coordinators should be located at places where there are adequate facilities for research and experimentation, and not necessarily at Central Institutes. At times it may be necessary to create such facilities at a place where a competent scientist is already available. In your view, what should be the criteria for the location of the Head-quarter of the project?

ANNEXURE

List of All-India Coordinated Research Projects of ICAR included in the Fourth Five Year Plan

(I) CROPS

(1) *Food Crops*

1. Rice.
2. Wheat.
3. Barley.
4. Maize.
5. Sorghum.
6. Millets.
7. Pulses.

(2) *Commercial Crops*

1. Sugarcane.
2. Sugarbeet.
3. Cotton.
4. Jute.
5. Oilseeds.
6. Soyabeans.
7. Tobacco.
8. Spices and Cashewnut.
9. Coconut and Arecanut.

(3) *Horticulture*

1. Fruits (including mango malformation and research on citrus die-back).
2. Tuber Crops.
3. Potato.
4. Vegetables.
5. Certification, Inspection and Registration of virus free citrus trees.
6. Establishment of regional research Stations for medicinal and aromatic plants.
7. Floriculture.

OTHERS :

1. Forage Crops.

(II) RESEARCH IN SOILS, AGRONOMY AND AGRICULTURAL ENGINEERING

Soil and Water Management.

1. Coordinated agronomic experiments.
2. Correlation of soil tests with crops response.
3. Micronutrients of soils.

4. Soil Structure.
5. Microbiological decomposition of organic matter.
6. Irrigation research in river valley projects.
7. Research on new cropping patterns and water use in selected command areas.
8. Strengthening of research on soil salinity, irrigation, drainage and water management.
9. Studies on engineering aspects of design and construction of open wells/tubewells.
10. Strengthening of research under rainfed conditions (Dryland Agriculture).
11. National Demonstrations on major food crops.
12. Long term fertilizer experiments.

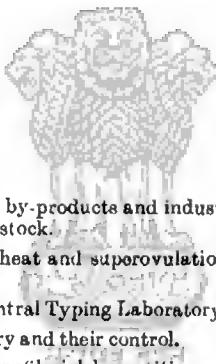
Research on Farm Power and Machinery

1. Establishment of zonal research centres for improved agricultural implements.
2. Energy requirements of intensive agricultural production programmes.

(III) ANIMAL SCIENCES RESEARCH

Veterinary and Animal Husbandry

1. Cattle.
2. Buffaloes.
3. Sheep for fine wool.
4. Sheep for mutton.
5. Goats for Mohair/Pashmina.
6. Goats for Milk.
7. Pigs.
8. Poultry for eggs.
9. Poultry for meat.
10. Investigation of agricultural by-products and industrial waste material for evolving economic rations for livestock.
11. Scope of synchronisation of heat and superovulation in sheep and goats for improved productivity.
12. Foot and mouth disease—Central Typing Laboratory.
13. Respiratory diseases of poultry and their control.
14. Biology and control of stephanofilarial dermatitis.
15. Epizootiology of nasal Schistosomiasis.
16. Calf mortality.
17. Blood groups and biochemical polymorphism found in Indian Farm Animals.



Dairying

1. Determination of the economics of milk production under the intensive dairy farming conditions in relation to high yielding varieties of cereals and cash crops.
2. Cost of chilling and transportation of milk to city dairies.
3. Economic methods of utilisation of surplus/ sub-standard milk.
4. Technological and economic problems of operation in liquid milk plants.

Animal Science Technology

1. Study of the technological problems in the commercial production of dressed poultry and piggery products.
2. Studies on the utilisation of slaughter house by-products.
3. Utilisation of trash fish.
4. Study of technological problems of handling and transport of fresh fish.
5. Studies on canary colouration of India wools.
6. Studies on the manufacturing trials of graded wools for the principal breeds of sheep.

(IV) FISHERIES RESEARCH

Fisheries

1. Investigation on riverine carp spawn prospecting and collection techniques.
2. Studies on the ecology and fisheries of fresh water reservoirs.
3. Studies on marine prawn biology and resources.
4. Propagation of stocking of fish seeds of air-breathing fishes for culture in swamps.
5. Composite culture of Indian and exotic species for maximum fish production in the culture operations.

APPENDIX III

List of Officers who responded to the Questionnaire

Name	Designa- tion	Address
1	2	3
CENTRAL RESEARCH INSTITUTES		
1. Dr. S.Y. Padmanabhan	. Director	Central Rice Research Institute, Cuttack-6, Orissa.
2. Dr. Kishan Singh	. Director	Indian Institute of Sugarcane Research, Lucknow-2, U. P.
3. Dr. N. Hriishi	. Director	Central Tuber Crops Research Institute, Trivandrum, Kerala.
4. Dr. Mukhtar Singh	. Director	Central Potato Research Institute, Simla-1, Himachal Pradesh.
5. Dr. N. C. Gopalachari	. Officiating Director	Central Tobacco Research Institute, Rajahmundry-1, Andhra Pradesh.
6. Shri K. V. Ahmed Bavappa	Director	Central Plantation Crops Research Institute, Kasaragod-4, Kerala.

1	2	3
7. Dr. G.S. Randhawa . . .	Director	Institute of Horticultural Research, Hessaraghatta, 255, Upper Palace, Orchards, Bangalore-6, Mysore.
8. Dr. S.B. Bandhyopadhyay	Director	Jute Technological Research Laboratory, 12, Regent Park, Calcutta-40, West Bengal.
9. Dr. D.R. Bhambhani . . .	Director	Central Soil Salinity Research Institute, Karnal, Haryana.
10. Dr. D. Sundaresan . . .	Director	National Dairy Research Institute, Karnal, Haryana.
11. Dr. R. M. Acharya . . .	Director	Central Sheep and Wool Research Institute, Avikanagar, Malpura, Rajasthan.
12. Dr. S.Z. Qasim . . .	Director	Central Marine Fisheries Research Institute, Jyoti Building, Gopala Prabhu Road, Cochin-11, Ernakulam, Kerala.
13. Dr. V.K. Pillai . . .	Director	Central Institute of Fisheries Technology, P. B. No. 1039, Chittoor Road, Cochin-11, Ernakulam, Kerala.
14. Dr. V.G. Jhingran . . .	Director	Central Inland Fisheries Research Institute, Barrackpore, West Bengal.

AGRICULTURAL UNIVERSITIES

15. Dr. G. Venkataratnam . . .	Registrar	Andhra Pradesh Agricultural University, Diluksha, Hyderabad-4, Andhra Pradesh.
16. Dr. L. S. Negi . . .	Vice-Chancellor	Assam Agricultural University, Jorhat-1, Assam.
17. Shri S. K. Chakraberty	Vice-Chancellor	Rajendra Agricultural University, Bihar Patna-14.
18. Shri A.L. Fletcher . . .	Vice-Chancellor	Haryana Agricultural University, Hissar, Haryana.
19. Dr. N.C. Pant . . .	Dean	Agricultural Complex, Himachal Pradesh University, Simla-5.
20. Shri M.S. Panwar . . .	Vice-Chancellor	Mahatma Phule Krishi Vidyapeeth, Distt. Ahmednagar, Rahuri, Maharashtra.
21. Shri N. Gopalakrishna . . .	Vice-Chancellor	Punjabrao Krishi Vidyapeeth, P. O. Krishi Nagar, Distt. Akola (M.S.) Maharashtra.

1	2	3
22. Dr. K.C. Naik . . .	Vice-Chancellor	University of Agril. Sciences, Post-Bag. No. 391, XI Main, 16th Cross Malleswaram, Bangalore-3, Mysore.
23. Dr. C. N. Nanda . . .	Vice-Chancellor	Orissa University of Agriculture and Technology, Bhubaneswar-3, Orissa.
24. Dr. M.S. Randhawa . . .	Vice-Chancellor	Punjab Agricultural University, Ludhiana, Punjab.
25. Dr. G. Rangaswami . . .	Vice-Chancellor	Tamil Nadu Agricultural University, Coimbatore-3, Tamil Nadu.
26. Shri D.P. Singh. . .	Vice-Chancellor	G.B. Pant University of Agriculture and Technology, Pantnagar, Uttar Pradesh.

STATE GOVERNMENTS

27. Shri B. Pratap Reddy . . .	Secretary-Incharge	Food and Agriculture Department, Govt. of Andhra Pradesh, Hyderabad, Andhra Pradesh.
28. Shri K. Subramanyam . . .	Director of Agriculture	Directorate of Agriculture, Govt. of Andhra Pradesh, Hyderabad, Andhra Pradesh.
29. Shri K.G. Badlani . . .	Secretary	Agriculture, Forests and Cooperation Department, Govt. of Gujarat Sachivalaya, Gandhinagar, Gujarat.
30. Shri G.L. Bailur . . .	Secretary	Agriculture Department, Government of Haryana, Chandigarh.
31. Shri S.C. Varma . . .	Production Commissioner	Agriculture Department, Govt. of Madhya Pradesh, Bhopal, Madhya Pradesh.
32. Shri M. Honnaganga Gowda . . .	Under Secretary	Govt. of Mysore, Mysore Govt. Secretariat, Vidhan Soudha, Bangalore, Mysore.
33. Shri A. Emkong Jamir . . .	Under Secretary	Agriculture Department, Govt. of Nagaland, Kohima.
34. Shri Santokh Singh Kundra . . .	Assistant Secretary	Development Department (Agriculture) Govt. of Punjab, Chandigarh.
35. Shri C.N. Penn-Anthony . . .	Secretary	Animal Husbandry and Veterinary Services Department, Govt. of West Bengal, Calcutta.
36. Shri B.N. Roy . . .	Deputy Secretary	Fisheries Department, Govt. of West Bengal, Calcutta.

APPENDIX IV

All-India Coordinated Research Projects Covered under the Fourth Five Year Plan and their Outlays

(Rs. lakhs)

Name of the Scheme 1	Date of original sanction of the project 2	Fourth Plan Revised Outlay 3	Actual Expenditure		Anticipated Expenditure			
			1969-70 4	1970-71 5	1971-72 6			
A. AGRICULTURE								
1. Crops								
(i) <i>Food Crops</i>								
1. Rice . . .	19-11-1969	160.00	13.05	14.82	33.00			
2. Wheat . . .	9-3-1970	65.00	1.06	5.25	12.00			
3. Barley . . .	25-7-1967	30.00	3.98	5.56	6.47			
4. Maize . . .	July, 1968	67.00	8.11	8.26	17.00			
5. Sorghum . . .	April, 1968	46.00	3.34	6.60	10.00			
6. Millets . . .	April, 1968	46.00	3.40	6.50	7.00			
7. Pulses. . .	Sept., 1967	86.13	5.44	6.41	10.00			
(ii) <i>Commercial Crops</i>								
1. Sugarcane . . .	2-7-1970	35.75	...	1.62	6.26			
2. Sugarbeet . . .	23-2-1970	20.00	...	2.01	5.00			
3. Cotton . . .	17-2-1967	137.00	22.54	20.93	24.00			
4. Jute . . .	17-9-1970	43.42	3.26	4.30	5.00			
5. Oilseeds . . .	31-3-1967	165.00	22.98	14.39	30.00			
6. Soyabean . . .	31-12-1966	17.24	1.60	1.88	3.60			
7. Tobacco . . .	31-3-1970	24.00	...	2.60	5.00			
8. Spices and Cashewnut	23-6-1970	21.78	...	1.70	3.18			
9. Coconut and Areca-nut.	1-10-1970	54.00	...	14.95	15.19			
(iii) <i>Horticulture</i>								
1. Fruits including mango mal-forma-tion and Research on Citrus die-back)	25-7-1970	43.85	5.15	7.34	10.69			

1	2	3	4	5	6
2. Tuber Crops .	29-7-1967	8.11	1.01	0.49	1.69
3. Potato . .	4-6-1970	13.84	...	1.57	2.50
4. Vegetables . .	12-2-1970	39.42	...	4.01	8.00
5. Certification, Inspection and Registration of virus free citrus trees.	28-3-1970	10.00	3.00	1.68	4.23
6. Establishment of regional Research Stations for medicinal and aromatic plants.	9-12-1969	5.00	0.16	0.20	0.50
7. Floriculture .	2-6-1970	7.83	...	0.31	1.30
<i>(iv) Others</i>					
1. Forage Crops .	28-4-1970	24.00	...	3.16	6.00
<i>2. Research in Soils, Agronomy and Agricultural Engineering</i>					
<i>Soil and Water Management</i>					
1. Coordinated agronomic experiments	9-12-1969	230.00	34.30	37.51	51.00
2. Correlation of soil tests with crop response	26-8-1970	34.86	3.05	5.89	6.00
3. Micronutrients of soils	23-1-1970	31.34	4.10	4.75	5.30
4. Soil structure	9-12-1969	22.00	3.52	3.29	5.00
5. Microbiological decomposition of organic matter	21-3-1970	15.87	3.09	2.88	3.24
6. Irrigation research in river valley projects	24-12-1969	23.00	3.74	5.06	4.30
7. Research on new cropping patterns and water use in selected command areas	3-1-1970	33.00	..	4.17	7.50
8. Strengthening of research on soil salinity, irrigation, drainage and water management	27-12-1969	73.10	6.82	11.49	15.00

1	2	3	4	5	6
9. Studies on engineering aspects of design and construction of open wells/tubewells	6-12-1969	13·00	..	1·00	1·50
10. Strengthening of research under rain-fed conditions (Dry-land Agriculture)	3-6-1970	178·00	..	7·75	40·00
11. National Demonstrations on major food crops	9-8-1965	235·00	3·58	28·00	54·40
12. Long term fertilizer experiment . . .	24-10-1969	5·00	..	0·04	1·00
<i>Research on Farm Power and Machinery</i>					
1. Establishment of zonal research centres for improved agricultural implements	17-12-1970	27·04	..	..	2·00
2. Energy requirements of intensive agricultural production programmes	1-9-1971	12·00	..	..	1·50
TOTAL AGRICULTURAL PROJECTS . . .		2103·56	160·28	248·37	425·05
B. ANIMAL SCIENCES RESEARCH*					
<i>Veterinary and Animal Husbandry</i>					
1. Cattle . . .	1-4-1969	238·25	6·00	12·39	
2. Buffaloes . . .	1-6-1970	81·50	..	5·41	
3. Sheep for fine wool	1-10-1970	28·84	..	..
4. Sheep for mutton .	1-10-1970	25·63	..	..
5. Goats for mohair/ Pashminn	1-7-1971	34·63	..	..
6. Goats for milk .	1-7-1971	34·66	..	..
7. Pigs . . .	1-10-1970	20·85	..	..
8. Poultry for eggs .	1-6-1970	131·09	..	2·17	
9. Poultry for meat .	1-4-1969	55·42	1·31	4·91	
10. Investigation of agricultural by-products and industrial waste material for evolving economic rations for livestock	1-9-1967	15·00	3·59	4·07	

1	2	3	4	5	6
11. Scope of synchronisation of heat and superovulation in sheep and goats for improved productivity	1-10-1967	3.00	0.67	0.60	
12. Foot and mouth disease—Central Typing Laboratory	1-10-1967	6.00	1.56	1.03	
12(a) Typing and Epidemiological studies of Foot and Mouth Disease	1-10-1967	24.07	..	..
13. Respiratory diseases of poultry and their control	1-12-1967	14.00	3.03	2.96	
14. Biology and control of stephanofilarial dermatitis	1-12-1967	7.00	0.78	1.29	
15. Epizootiology of Nasal Schistosomiasis	1-4-1970	6.97	..	0.09	
16. Calf mortality	1-10-1970	5.00	..	0.67	
17. Blood groups and biochemical polymorphism found in Indian Farm Animals.	1-4-1970	10.00	..	0.83	
<i>Dairying</i>					
1. Determination of the economics of milk production under the intensive dairy farming conditions in relation to high yielding varieties of cereals and cash crops	1-9-1970	75.00	..	0.19	
2. Cost of chilling and transportation of milk to city dairies	1-4-1970				
3. Economic methods of utilisation of surplus/sub-standard milk	1-4-1970		..	1.46	
4. Technological and economic problems of operation in liquid milk plants.	1-4-1970		..	1.18	

1	2	3	4	5	6
<i>Animal Science Technology</i>					
1. Study of the technological problems in the commercial production of dressed poultry and piggery products	1-4-1970		..	..
2. Studies in the utilisation of slaughter house by-products.	1-4-1970		..	0·23	
3. Utilisation of trash fish	1-4-1970		..	0·20	
4. Study of technological problems of handling and transport of fresh fish.	1-4-1970	65·83	..	2·93	
5. Studies on canary wools.	1-4-1970		..	0·12	
6. Studies of the manufacturing trials of graded wools for the principal breeds of sheep	1-4-1970		..	..
<i>FISHERIES RESEARCH*</i>					
<i>Fisheries</i>					
1. Investigation of riverine carp spawn prospecting and collection techniques	1-4-1970		..	..
2. Studies on the ecology and fisheries of fresh water reservoirs	1-4-1970	24·37	..	..
3. Studies on marine prawn biology and resources	1-4-1970		..	..
4. Propagation of stocking of fish seeds of air-breathing fishes for culture in swamps	1-4-1970		..	..
5. Composite culture of Indian and exotic species for maximum fish production in the culture operations	1-4-1970		..	..
TOTAL ANIMAL SCIENCES PROJECTS . . .		908·01	17·57	42·13	166·29*
GRAND TOTAL . . .		3011·57	177·85	290·50	591·34

*Lump-sum provision has been given for 1971-72.

APPENDIX V

Location of Coordinated Research Projects Headquarters

Name of Coordinated Research Project	Location of the Project Coordinator
1	2
I. Indian Agricultural Research Institute, New Delhi	
1. Wheat	Cereal Research Laboratory
2. Barley	Genetics Division
3. Maize	Genetics Division
4. Millets	Genetics Division
5. Pulses	Genetics Division
6. Oilseeds	Genetics Division
7. Soyabeans	Division of Plant Introduction
8. Vegetables	Division of Vegetable Crops and Floriculture
9. Medicinal and Aromatic plants	Division of Plant Introduction
10. Coordinated Agronomic Experiments	Division of Agronomy
11. Correlation of Soil test with Crop responses.	Division of Soil Science and Agricultural Chemistry.
12. Studies of Measurement, Evaluation and Improvement of Soil Structure.	Division of Agricultural Physics.
13. Microbiological Decomposition of Organic Matters.	Division of Microbiology
14. Long Term Fertilizer Experiments.	Division of Soil Science and Agricultural Chemistry.
15. New Cropping Pattern and Water use in Selected Command Areas.	
16. Zonal Research Centres for improved Agricultural Implements and Machinery	
17. Floriculture	Division of Vegetable Crops and Floriculture
18. Post Harvest Technology	
II. Regional Research Centres, IARI	
19. Rice	Rajindra Nagar, Hyderabad.
20. Sorghum	Rajindra Nagar, Hyderabad.
21. Cotton	Coimbatore.

1	2
<i>III. Central Research Institute</i>	
22. Sugarcane	Indian Institute of Sugarcane Research, Lucknow.
23. Sugarbeet	Indian Institute of Sugarcane Research, Lucknow.
24. Jute	Jute Technological Laboratory, Calcutta.
25. Spices and Cashewnut	Central Plantation Crops Research Institute, Kasaragod.
26. Coconut and Arecanut	Central Plantation Crops Research Institute, Kasaragod.
27. Fruits	Mango Research Station, Lucknow, Sub-Station of Indian Horticultural Research Institute.
28. Tuber Crops	Central Tuber Crops Research Institute, Trivandrum.
29. Potato	Central Potato Research Institute, Simla.
30. Citrus Fruits-- Banana and Pineapple.	Institute of Horticultural Research, Bangalore.
31. Forage Crops	Indian Grassland and Forage Research Institute, Jhansi.
32. Coordinated Scheme for Research on Water Management and Soil Salinity.	Central Soil Salinity and Research Institute, Karnal, Haryana.
33. Irrigation Research in River Valley Projects.	Central Soil Salinity and Research Institute, Karnal, Haryana.
34. Studies on engineering aspects of design and construction of open wells/tubewells.	Central Soil Salinity and Research Institute, Karnal, Haryana.
35. Cattle	Indian Veterinary Research Institute, Izatnagar, U. P.
36. Buffaloes	National Dairy Research Institute, Karnal.
37. Sheep for fine wool	Central Sheep and Wool Research Institute, Avikanagar, Rajasthan.
38. Sheep for mutton	Central Sheep and Wool Research Institute, Avikanager, Rajasthan.
39. Goats for Mohair/Pashmina	Indian Veterinary Research Institute, Mukteswar, U. P.
40. Goats for milk	National Dairy Research Institute, Karnal, Haryana.
41. Pigs	Indian Veterinary Research Institute, Izatnagar, U. P.
42. Poultry for Eggs	Indian Veterinary Research Institute, Izatnagar, U. P.
43. Poultry for Meat	Indian Veterinary Research Institute, Izatnagar, U. P.
44. Investigation of agricultural by-products and Industrial Waste Materials for evolving economic rations for Livestock.	Indian Veterinary Research Institute, Izatnagar, U. P.

1	2
45. Epidemiological Studies on Foot and Mouth Disease.	Indian Veterinary Research Institute, Mankteswar, U. P.
46. Respiratory Diseases of Poultry and their control.	Indian Veterinary Research Institute, Izatnagar, U. P.
47. Biology and Control of Stephanofilarial Dermatitis	Indian Veterinary Research Institute, Izatnagar, U. P.
48. Investigation on Calf Mortality . . .	Indian Veterinary Research Institute, Izatnagar, U. P.
49. Blood Groups and Biochemical polymorphism found in Indian Farm Animals.	National Dairy Research Institute, Karnal, Haryana.
50. Determination of the Economics of Milk production under the Intensive Dairy Farming Conditions in relation to high yielding varieties of cereals and cash crops.	Indian Grassland and Forage Research Institute, Jhansi, U. P.
51. Cost of Chilling and Transportation of milk to city dairies.	National Dairy Research Institute, Karnal, Haryana.
52. Economic methods of utilisation of surplus/suh-standard milk.	National Dairy Research Institute, Karnal, Haryana.
53. Technological and Economic problems of operation in liquid milk plants.	National Dairy Research Institute, Karnal, Haryana.
54. Studies in the utilisation of slaughter house by-products.	Indian Veterinary Research Institute, Izatnagar, U. P.
55. Studies on canary colouration of Indian Wools.	Central Sheep and Wool Research Institute, Avikanagar, Rajasthan.
56. Studies of the manufacturing trials of graded wools for the principal breeds of sheep.	Central Sheep and Wool Research Institute, Avikanagar, Rajasthan.
57. Utilisation of trash fish	Central Institute of Fisheries Technology Ernakulam, Cochin.
58. Study of Technological problems of handling and transport of fresh fish.	Central Institute of Fisheries Technology, Cochin, Karala.
59. Investigation of Riverine Carp Spawn prospecting and collection techniques.	Central Inland Fisheries Research Sub-Station, Allahabad, U. P.
60. Studies on the ecology and fisheries of fresh water.	Central Inland Fisheries Research Sub-Station, Hazaribagh, Bihar.
61. Propagation of stocking of fish seeds of Air Breathing fishes for culture in Swamps	Central Inland Fisheries Research Institute, Lalchiarasai, Bihar.
62. Composite culture of Indian and Exotic species for maximum fish production in the culture operations.	Central Inland Fisheries Research Institute, Barrackpore, West Bengal.
<i>IV. Indian Council of Agricultural Research</i>	
63. National Demonstrations on major food crops.	Indian Council of Agricultural Research, Krishi Bhavan, New Delhi.

1	2
<i>V. Universities and other Institutes</i>	
64. Tobacco	Institute of Agriculture, Anand, Gujarat.
65. Micronutrients of Soils	Punjab Agricultural University, Ludhiana.
66. Strengthening of Research under rainfed conditions (Dryland Agriculture).	College of Agricultural University Nagar, Hyderabad
67. Energy requirements of intensive agricultural production programmes.	Punjab Agricultural University, Ludhiana.
68. Biological control of Nasal schistosomiasis in Bovines.	Madras Veterinary College, Madras.
69. Dressed Poultry and Piggery Products.	Mahatma Phule Krishi Vidyapeeth, Dist. Ahmednagar, Maharashtra.
70. Scope of synchronisation of heat and superovulation in sheep and goats for improved productivity.	College of Veterinary Sciences and Animal Husbandry, Mathura, U.P.

APPENDIX VI

Note on the Coordinated Research Projects by the I.C.A.R.

The All-India Coordinated Research Projects formulated by the I.C.A.R. represent a unique endeavour towards planning and executing agricultural research on a national basis. It was recognised by the ICAR that the financing of *ad-hoc* research schemes in an isolated and uncoordinated manner, as was generally done in the past by the ICAR and the Commodity Committees was for various reasons not a very effective approach to the solution of research problems in the country as a whole. Therefore, the Council has adopted the policy of sponsoring the operation of a major research project on a coordinated all-India basis as was successfully done during the Third Plan, in the case of Coordinated Maize Breeding Scheme. Henceforth, *ad-hoc* schemes are being considered and approved only with regard to items which are outside the purview of the coordinated projects and are considered necessary to meet the research requirements in some specific fields. The all-India coordinated projects of the ICAR have been based on the following three concepts: (i) Problem-oriented, coordinated research programmes; (ii) Intensification of research at selected centres for tackling important problems to support the new strategy of Agriculture, and (iii) Strengthening of research where some leadership and the desired facilities are available. In formulating these all-India coordinated projects, the problem is visualised for the country as a whole and research centres and sub-centres are located in different parts of the country to meet the needs of areas covered by distinct agro-climatic zones and regions rather than on the basis of individual States. The selective approach is necessitated by limitations on funds, paucity of centres of research in the country having reasonably good physical facilities for research and the scarcity of well-trained and experienced scientists in the country for manning the various research positions. Thus instead of spreading too thin, efforts have been made to consolidate and intensify research at a few selected centres representing different soil and climatic conditions. The projects are operated in collaboration with the Central Research Institutes and Agricultural Universities and State departments of Agriculture. The centres and sub-centres are located on the basis of regional requirements at places where a good nucleus already exists. In providing the staff and other facilities, the primary consideration is to coordinate the existing staff and physical facilities at these centres with the additional provisions made under the all-India coordinated projects, such that the programme

the building up of extensive collection of germ plasm from all over the world and especially from the centres of the origin and genetic diversity in respect of the crop under study. No plant breeding programme can achieve worthwhile success in the absence of extensive collections of genetic stock. A major weakness of many a breeding programme in the past in this country has been the narrow range of germ plasm with which breeders have carried out their breeding work. Endeavour is, therefore, being made to build up large germ plasm collections not only through correspondence but, wherever necessary, by sending out exploration and collection teams to other countries. These collections and other breeding materials are being supplied to all the institutions cooperating in the project for conducting multi-location tests as has been so successfully done in the past in the case of maize, sorghum, millets, wheat and rice. In this context, the Division of Plant Introduction at the I.A.R.I. is playing a significant role and, therefore, it was felt necessary to strengthen that Division, as a national service agency, in terms of staff and physical facilities to fulfil this role.

Another important feature of these coordinated projects is the multi-disciplinary approach. Thus for example, in the coordinated project on crop improvement where the main emphasis is on breeding of superior varieties and hybrids, research work is simultaneously carried out in related fields like agronomy, plant pathology, entomology and biochemistry, so that all the facets of research which are necessary to bring about an overall improvement in crop production, both in terms of quantity and quality are brought to bear on the problem. The essence of the approach is to have a team-work approach to the problem which is so very essential for the success of research in any field of scientific activity today and is especially true of agricultural research. Important projects have been drawn up so as to cover diverse fields, such as improvement of the major food, fodder and commercial crops (including plantation crops and spices), research in soils, agronomy and agricultural engineering as also in animal sciences.

